MACKENZIE,[7] in continuation of his studies of *Carex*, has presented the "Californian representatives of the OVALES." The list includes 25 species, 15 of which are described as new.

ROBINSON[8] has published a detailed monograph of the American genus *Brickellia*. The need of it, the author remarks, "presents no unusual condition among the larger genera of the Compositae." The 91 species, 11 of which are new, are grouped in 9 sections. The systematic presentation is preceded by a full discussion of the diagnostic value of the characters used.

RYDBERG,[9] in continuation of his studies of the Rosaceae, has investigated the species of *Rosa* occurring in California and Nevada. He recognizes 34 species, 12 of which are described as new.

TIDESTROM[10] has described a new *Allium* (*A. platyphyllum*) from the Wallowa National Forest of Oregon.—J. M. C.

Effect of carbon dioxide on respiration.—KIDD[11] has studied the effect of various concentrations of carbon dioxide on the rate of anaerobic and aerobic respiration of seeds of peas with testas both intact and removed. The work is marked by brilliancy of design, and in the main of execution. In concentrations of CO_2 ranging from 0 to 50 per cent, the depressing effect on anaerobic respiration is proportional to the square root of the concentration. As the concentration rises above 50 per cent, the depressing effect falls more and more behind the square root of the concentration. Carbon dioxide also depresses aerobic respiration when measured either by oxygen consumption or CO_2 production. In the latter case the concentration effect is similar to that in anaerobic respiration. When oxygen is deficient, CO_2 has no depressing effect upon the oxidation phase. It is assumed that the primary anaerobic phase is then progressing fast enough not to limit the secondary aerobic phase of respiration, and that it is only the anaerobic phase that CO_2 depresses. Only the so-called floating respiration of BLACKMAN (respiration of storage carbohydrates, fats, and proteins) and not protoplasmic respiration (respiration still occurring in starving tissue) is thus depressed. The work throws considerable light upon the mechanism of respiration.

In work of this sort one should be sure that the cultures are sterile and that the anaerobic CO_2 production is that of the seeds and not of organisms growing

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[7] MACKENZIE, K. K., Notes on *Carex*. XI. Bull. Torr. Bot. Club **43**:601–620. 1916.

[8] ROBINSON, B. L., A monograph of the genus *Brickellia*. Memoirs Gray Herb. I. pp. 151. *figs.* 95. 1917.

[9] RYDBERG, PER AXEL, Notes on Rosaceae. XI. Bull. Torr. Bot. Club **44**:65–84. 1917.

[10] TIDESTROM, IVAR, *Allium platyphyllum*, sp. nov. Torreya **16**:242. 1916.

[11] KIDD, FRANKLIN, The controlling influence of carbon dioxide. Part III. The retarding effect of carbon dioxide on respiration. Proc. Roy. Soc. B **89**:136–156. 1916.

on them. While the author speaks of sterilizing the seeds with bromine, he says nothing about making cultures to assure that they are sterile. Many authors find it difficult to sterilize seeds without killing them. This is specially true of those with open micropyles. From the first two papers of the series, KIDD reemphasizes his conception that the dormancy of "moist seeds" is due to the anesthetic action of carbon dioxide which is held in by seed coats. If this be the cause of dormancy in any imbibed seeds, it is limited in its application. It does not apply to seeds which have a rest period during which the embryo is developing; to seeds like *Alisma* and *Amaranthus*, in which the swelling contents do not have sufficient pressure to break the coats; or to seeds like *Crataegus*, in which the embryos are dormant when naked.[12] He has by no means proved that this holds even for forms forced by increased oxygen pressure (*Xanthium* and others). His conception implies that the coats of these seeds are very slightly permeable to CO_2. In the elementary course in plant physiology in Hull Botanical Laboratory, we used for years various seed coats and the epidermis of various leaves to show that moist plant membranes are relatively very permeable to CO_2 in contrast to oxygen and nitrogen. KIDD's assumption concerning CO_2 and dormancy of seeds, therefore, even under limited application, cannot be considered more than an hypothesis without a study of the permeability character of the seed coats to CO_2 and other gases.—WM. CROCKER.

Vegetation of South Africa.—In a region where climate differs strikingly over areas of comparatively small size, there is usually a corresponding diversity of vegetation. Apparently such diversity is displayed to a remarkable degree in South Africa, as seen in the recent studies by BEWS. In his earlier papers, reviewed in this journal,[13] a general account of the vegetation of Natal was given and a more detailed study of some areas within its limits. In his latest article BEWS[14] has sketched the vegetation of a wider area and has begun the study of its succession. The condition of Table Mountain is perhaps typical of the broader area, showing a precipitation upon the western side of 60–75 cm. annually and resulting sclerophyllous scrub communities, while upon the eastern slopes the precipitation is doubled and a rather mesophytic forest results. The former characterizes the southwestern region of the Cape and passes from a fell field with an open stand of grasses, Crassulaceae, Compositae, and dwarf Ericaceae, to a heath dominated by *Blaeria ericoides*, a South African heather, or by a variety of dwarf shrubs in which species of *Protea*, *Erica*, *Rhus*, *Polygala*, and many less familiar genera, along with many bulbous monocotyledons, are conspicuous.

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[12] CROCKER, WM., Mechanics of dormancy in seeds. Amer. Jour. Bot. 3:99–120. 1916.

[13] BOT. GAZ. 59:68–69. 1915.

[14] BEWS, J. W., An account of the chief types of vegetation in South Africa, with notes on the plant succession. Jour. Ecol. 4:129–158. 1916.